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(54) Machine for steam ironing clothes.

(57) The machine for steam ironing (1) clothes comprises a closet frame (2), members for supporting (5, 6) clothes to be ironed and being connected to vapor blowing members (18) and a ventilating unit (7). The supporting members (5, 6) are accommodated inside two separate booths (3, 4) one of which is set up for steam ironing trousers (22) and the like, and the other of which is equipped for ironing such clothes as jackets, overcoats, and the like.

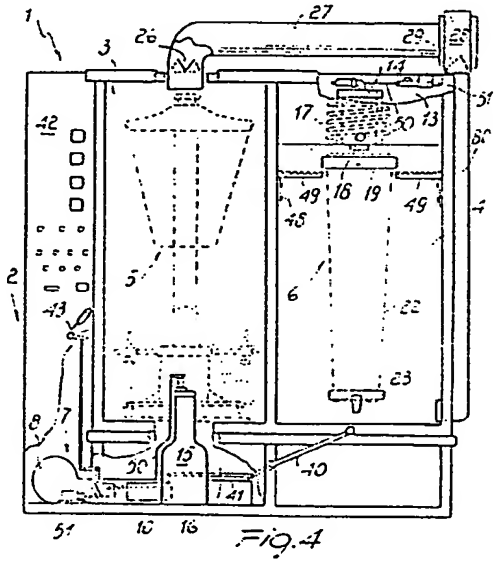

Fig.4

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"MACHINE FOR STEAM IRONING CLOTHES"

This invention relates to a machine for steam ironing clothes, and is particularly useful in dry-cleaning, dyeing, and the like establishments.

Known are several methods of steam ironing clothes which usually utilise steam blown through their fibers to remove any wrinkles therefrom which they may have developed while in use, this action being assisted possibly by holding the clothes in a stretched state.

As a rule, manikins are employed which are mounted on a base or bed and deliver steam to the environment where the operation is carried out. It will be appreciated that this can be of considerable inconvenience to the operators, who are thus subjected to intense heat in their working areas during the steps of steaming and drying the clothes being ironed.

The same procedure is gone through for ironing such articles of clothing as trousers, since the latter would be suspended under a steam jet, the leg ends held closed by clamps, and subsequently a jet of heated air is directed into the suspended article.

Another prior method is that of placing the clothes to be ironed into an enclosure and subjecting them to the cited treatment; in this case, the ironing operation takes place within the machine, which may be differently equipped for ironing jackets, trousers, or other articles, but owing indeed to the universal character of such machines the clothes

ironing quality is unsatisfactory.

It should be further considered that prior machines having a single treatment chamber often involve considerable downtime for unloading a processed article at the end of the process and loading a new one, during the processing time the operator being left idle awaiting.

On the other hand, today's commercially available machines are manufactured with control arrangements of their own, and accordingly, coupling together two or more such prior machines would involve the purchase, installation, and maintenance of a number of ancillary or control structures equal in number to the number of the machines thus coupled together.

In view of the above problems, it is a primary object of this invention to remove such prior drawbacks by providing a machine for ironing clothes in general, which can afford an improved output rate in terms of ironed articles of clothing per unit time, while improving the quality of the ironed article.

It is another object of the invention to eliminate the operator's waiting time during the ironing of an article of clothing.

A further object of the invention is to simplify and standardise the ancillary or control structures in a machine for steam ironing capable of providing high output rates.

Still another object of this invention is to reduce the overall size of an ironing machine,

thereby it can be installed in small size rooms, while affording a working site which is ecologically and hygienically appropriate.

These and other objects are achieved by a machine for steam ironing clothes in general, which comprises, within a closet frame, members for supporting clothes to be ironed and being operatively connected to vapor blowing members and to a ventilating unit, and is characterised in that said supporting members are housed in at least two separate booths, at least one of said booths being set up for steam ironing trousers and the like and at least another of said booths being set up for ironing such clothes as jackets, overcoats, and the like, a single closure door being provided for said booths.

Advantageously, said door is carried slidably on said frame and alternately closes either of said booths.

Further features and advantages will be apparent from the following detailed description of the machine for steam ironing clothes in general according to this invention, with reference to the accompanying illustrative drawings, where:

Figure 1 is a perspective view of the machine of this invention;

Figure 2 is a plan view showing a detail of the door slideways;

Figure 3 is a top plan view, in section on offset planes through each booth, of the machine of this invention;

Figure 4 is a partly sectional front elevation view, through the first booth and ventilating unit, of the inventive machine;

Figure 5 is a diagramatic top plan view of this steam ironing machine;

Figure 6 shows a detail of the ventilating unit control gate; and

Figure 7 is a perspective view of a bracket for suspending hangers.

Making reference to the drawing views, the machine of this invention is generally designated with the reference numeral 1 and comprises essentially a closet frame 2 wherein a first booth 3 and second booth 4 are mounted side-by-side but held separately apart; placed inside each of the booths are members for supporting clothes to be ironed, such as a manikin 5 for ironing jackets, overcoats, dresses, and the like, in the first booth, and a fixture 6 for ironing trousers, and the like, in the second booth.

Both booths are connected to a ventilating unit 7 including a fan 8 which is connected hydraulically to a first ventilating duct 9 located at the bottom of the first booth and selectively shut off by means of a swinging vane 10 of a deflector unit 11 so as to allow the admission of air into the first booth to be selected, or according to the position taken by the vane, hydraulic connection of the fan to the second booth. A similar principle may be utilised to switch over a steam flow as explained hereinafter.

The ventilating duct 9 is extended horizontally to a space 12 between the bottom walls of the adjacent booths where it extends vertically to the booth tops to open into a compartment 13 at the top end of the booth 4.

Located in said compartment is a tank 14 for collecting steam and condensation water, which is connected hydraulically to a steam generator 15 located at the bottom of the first booth and partly arranged below the manikin 5.

The generator 15, where the machine is connected to an independent steam supply, may also be replaced with a water collecting or discharging tank.

The steam generator is located in a chamber 16 which is communicated to the first ventilating duct through commands imparted on the swinging vane 10; thus, the ventilating air is heated while sweeping past the generator and promotes drying of the article to be ironed.

Located around the tank 14 is of preference a coil 17 wherethrough the steam flow is passed which thus reaches the water trap tank after heating the air being fed into the compartment 13 and forming a thermal exchange device.

Mounted on the partition wall between the compartment 13 and booth 4 is a steam blowing nozzle 18 underlaid by members for supporting clothes to be ironed comprising in this case trousers supports fabricated in a manner known per se for example by means of a fixed bow 19 cooperating with a moving bow 20, which is loaded by a counterweight 21 and holds

the cited trousers spread and suspended under the blowing nozzle.

The cited trousers designated with the reference numeral 22 are suspended from the bows and clamped at the lower ends by means of tensioning members 23 possibly comprising a pair of grippers.

At the nozzle 18 in the compartment 13 there is formed a distribution chamber 24 having a swinging vane 25 operative to admit air flow into the distribution chamber jointly in the direction from the compartment 13 to the booth 4.

Both booths are equipped with one-way valves for exhausting the spent air or steam to the outside of the closet frame; in particular the first booth is provided with a throttle 26 located in a first exhaust duct 27 in communication with an exhaust distributor 28.

Also in communication with said distributor 28 is a second exhaust duct 80 connected to the second booth, picking up exhaust air from the bottom of the booth and being provided, at the distributor 28, with a one-way valve 29 which only allows air and/or steam to flow from the direction from the second booth toward the distributor 28.

Both booths cooperate with a closure door 30 which is carried slidably on the frame 2 and alternatively closes either of said booths.

The door is mounted on slideways 31 associated with the front wall corresponding to the open surface of the booths of the closet frame. The slideways,

detailedly shown in Figure 2, have a shaped profile having, at the closed positions of the door over either booth, elastic bias means 33 acting on engagement wheels 34 arranged on the upper and lower sides of the door to urge the door, on reaching its closed position, against the frame front wall.

On its coupling face looking towards the booths the door is provided with a gasket 35 effective to sealingly close the corresponding booth.

The closure door is preferably provided with a peripheral frame 36 and framing a transparent plate-like element 37; handles 38 are provided on the frame, and at the bottom portion of said frame on the side toward the deflector, a pair of pegs 39 cooperate with a deflector lever 40 which, through a linkage 41, acts on the swinging vane 10 to effect the connection of the ventilating unit or possibly of the steam blower to that of the booths which is closed by the door at the time.

Side-by-side with the booths, the closet frame further includes a control panel 42 having the machine controls and instruments among which are timers and programmers of known types driving both the ventilating unit and steam generator.

Also mounted on the control panel is a lever 43 for controlling the air flow delivered from the fan 8. Said lever, through a deflector linkage 44 drives a shaft 45 on which acts a friction device 46 and carrying, moreover, at the outlet mouth of the fan, a device for throttling the air flow 47.

Inside either or both of the booths there are blocks 48 provided for removably attaching hanger holding brackets 49 shown in Figure 7, on such brackets hangers may be hung on which articles of clothing to be steamed such as sweaters, shirts, and the like can be placed.

The steam blowing members, the one in the tank 14 and the other preferably associated with the generator 15, may be driven by means of electromagnets 51 acting on links 50.

The operation of the machine according to the invention is apparent from what has been described and illustrated; in particular articles of clothing such as jackets or overcoats may be ironed in the first booth, arranged on the manikin 5, upon closure of the door 30.

While the door is closed the lever 40 moves to operate, through the linkage 41, the swinging vane 10 which puts the ventilating unit in communication with the chamber 3.

During the first ironing step, as preset by means of the programmers arranged on the panel 42, the steam generator introduces into the manikin interior steam under pressure which, in flowing through the article fabric, causes wrinkles and crumplings to be removed therefrom.

On completion of that step, a wait time may be contemplated to fully utilise the steam admitted into the booth and carrying on its action on the article.

At the end of the wait time the fan 8 becomes

operative to deliver a flow of air into the chamber 16; that air, in sweeping past the steam generator is heated and is introduced into the manikin 5 at a higher temperature than the ambient one.

Owing to the pressure the throttle 26 opens to allow exhausting of the previously introduced air and/or steam, through the distributor 28 which may be connected directly to the exterior of the room where the machine is thus avoiding pollution of the room.

Simultaneously with the ironing step carried out in the first booth, the operator may set up the second booth for example by arranging for ironing the trousers 22.

Said rigging is effected by loading the trousers at the waist on the bows 19 and 20 and then releasing the latter bow such that, under the effect of the counterweight 21, it holds the trousers spread and firmly at an area underlying the nozzle 18.

Grippers 23 or any desired like device of a conventional design may be applied to the end portion of the trousers legs.

Then, on completion of the ironing step in the first booth, the door is caused to slide along its slideways such as to engage it to close the second booth. In that condition the deflector operates again the swinging vane to connect the ventilating unit to the space 12 and hence to the compartment 13 and second booth.

In the meantime the steam generator provided for loading steam into the tank 14 thus heating the tank

itself and coil 17 wound around it.

By acting on the electromagnetic controls 49 through the control panels, one causes steam to be supplied to the nozzle 18 which introduces steam into the second booth conveying it toward the interior of the suspended trousers. The steam thus introduced acts as discussed previously and at the end of that steaming step the fan 8 becomes again operative to convey air into the compartment 13.

Thanks to the oscillating wall 25, it is only in these conditions that communication between the booth 4 and cited compartment 13 is made possible because during the previous steaming step, the wall 25 sealed the distribution chamber 24 off.

Through said distribution chamber 24 the air enters the second booth to provide for drying the trousers or any clothes applied to the hanger holding brackets 49.

The spent air is again conveyed to the exhaust distributor and owing to its overpressure state automatically opens the one-way valve 29.

For ironing delicate garments and in all cases to control the flow of air produced by the fan 8, it is possible to manually operate the lever 43 so as to orient the throttling device 47.

Thanks to the friction device 46 that control is maintained with time until the operator deems it appropriate to again operate the lever 43.

Side-by-side to the machine thus described it is possible to place an ironing board of a known type

optionally directly merging with the machine steam generator and usable for finishing previously steam ironed articles.

Apparent are the advantages of the machine according to the invention in particular as regards the elimination of pollution of the room accommodating the machine to protect the working conditions of the operators as well as the advantages resulting from the utilisation of separate booths since this makes it possible in the first instance to save on the down-time for rigging the booths and secondly an improved energy utilisation of the machine allowing full utilisation of the steam introduced in each booth.

In practicing the invention the materials used and the dimensions and contingent shapes may be any ones depending on requirements and the state of the art.

CLAIMS

1. A machine for steam ironing clothes comprising, within a closet frame (2), members (5,6) for supporting clothes to be ironed and being operatively connected to vapor blowing members (18)and to a ventilating unit (7) and characterised in that said supporting members (5,6) are housed in at least two separate booths (3,4), at least one of said booths (3,4) being set up for steam ironing trousers (22) and the like, and at least another of said booths (3,4) being set up for ironing such clothes as jackets, overcoats, and the like, a single closure door (30) being provided for said booths.

2. A machine according to Claim 1, characterised in that said door (30) is carried slidably on said frame (2) and alternately closes either of said booths (3,4).

3. A machine according to Claim 1 and/or 2, characterised in that said door (30) is mounted on slideways (31) arranged at front edges of said closet frame (2) and cooperates with a deflector (11) acting on said ventilating unit (7) and/or steam blower (18) to connect it hydraulically to that of said booths (3,4) which is closed by said door (30).

4. A machine according to one or more of the preceding claims, characterised in that said deflector (11) comprises, on a frame (36) of said door (30), a pair of pegs (39) cooperating with a deflector lever (40) acting, through a linkage (41), on a swinging vane (25) mounted in said ventilating unit

(7).

5. A machine according to any of the preceding claims, characterised in that between adjacent booths (3,4) there is defined a space (12) hydraulically connected to said ventilating unit (7) and either of said booths (3,4).

6. A machine according to one or more of the preceding claims, characterised in that on said ventilating unit (7) there is provided a throttling device (47) for the air flow conveyed to said booths (3,4).

7. A machine according to one or more of the preceding claims, characterised in that said booths (3,4) are provided, on exhaust ducts (27,80), with one-way valves.

8. A machine according to one or more of the preceding claims, characterised in that in at least one of said booths (3,4) there are mounted blocks (48) wherewith hanger holding brackets (49) are removably associable.

9. A machine according to one or more of the preceding claims, characterised in that said vapor blowing members (18) are provided with thermal exchange devices (13,11,17) for heating the air delivered by said ventilating unit (7) to said booths (3,4).

10. A machine for steam ironing clothes according to the preceding claims and substantially as herein described and illustrated.

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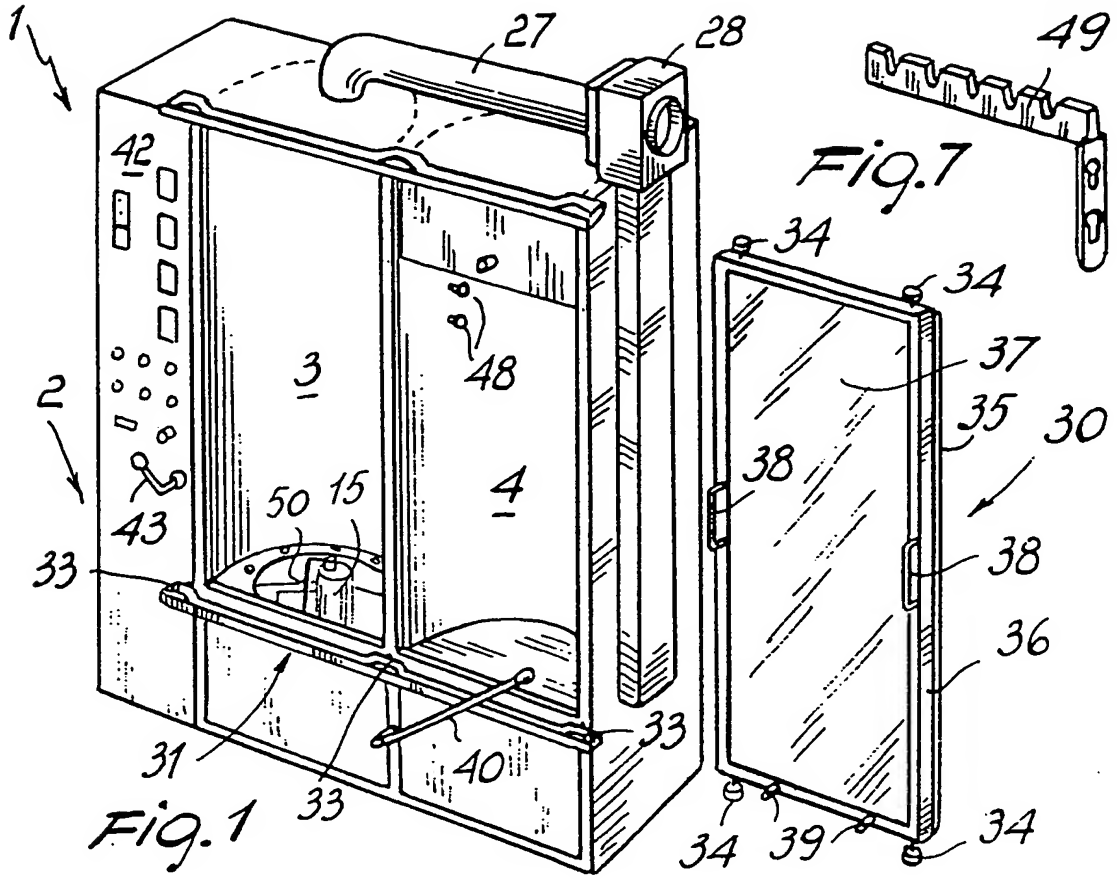

Fig.1 Fig.7

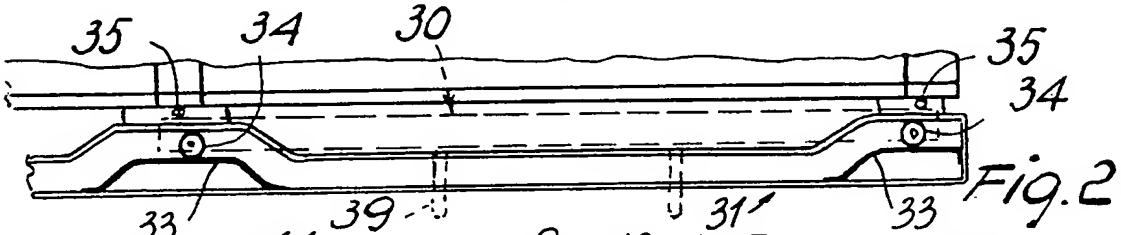

Fig.2

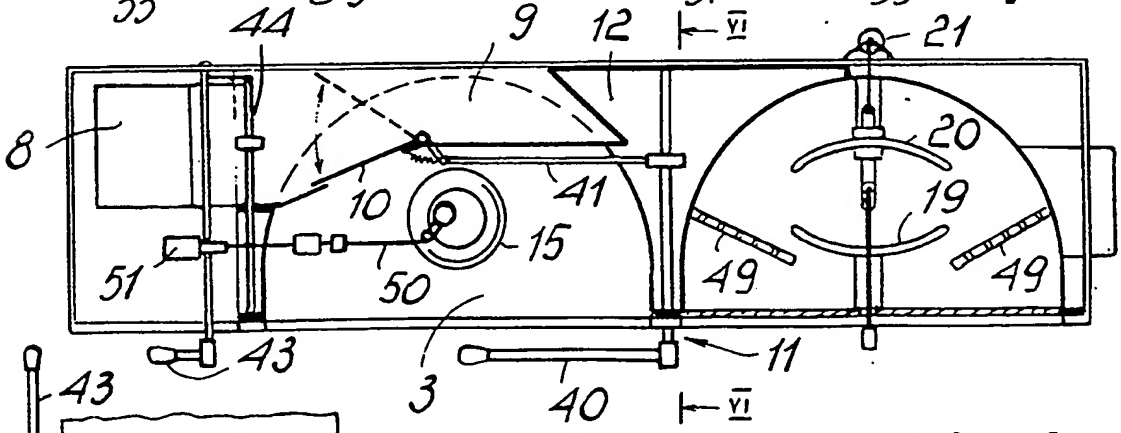

Fig.3

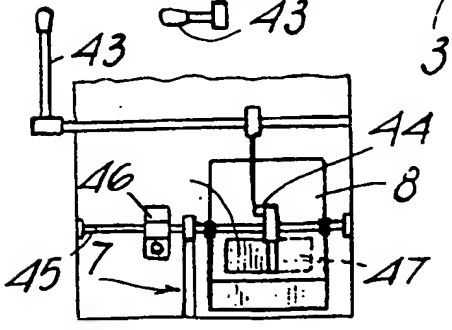

Fig.6

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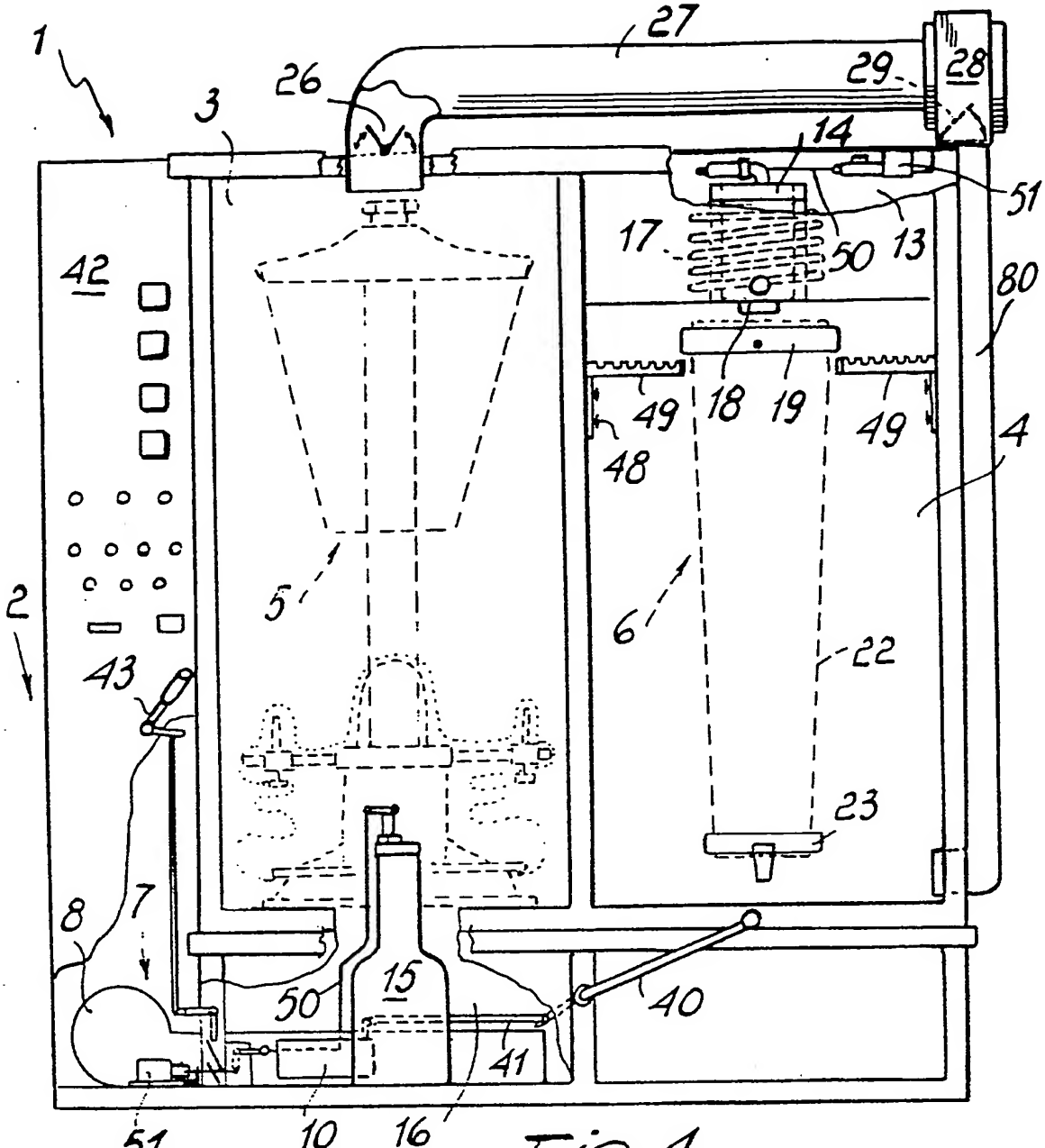

Fig.4

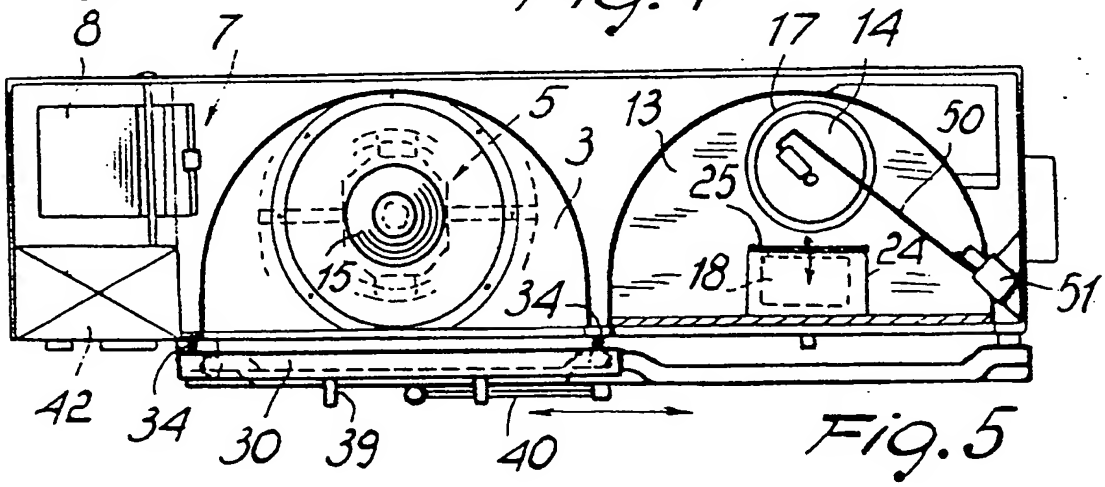

Fig.5